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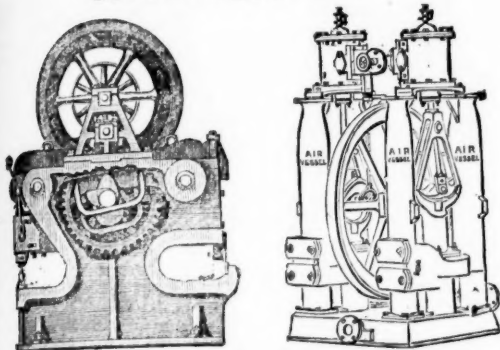
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LONDON, SATURDAY, SEPTEMBER 30, 1876.

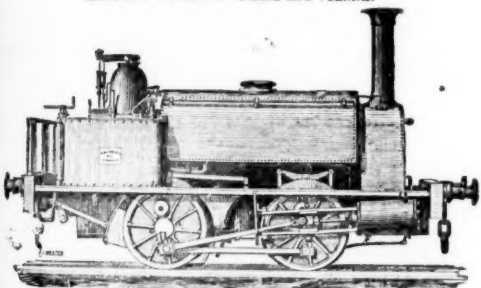
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PARIS,
BRONZE MEDAL, 1867.



ORDER OF THE CROWN OF PRUSSIA.



FALMOUTH,
SILVER MEDAL, 1867.

A DIPLOMA—HIGHEST OF ALL AWARDS—given by the
Geographical Congress, Paris, 1875—M. Favre, Contractor, having
exhibited the McKean Drill alone as the MODEL BORING MACHINE
for the ST. GOTHARD TUNNEL.

SILVER MEDAL of the Highland and West of Scotland
Agricultural Society, 1875—HIGHEST AWARD.

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Are exclusively used, the advance made during eight consecu-
tive weeks, ending February 7, was 24-90, 27-60, 24-80, 26-10,
28-30, 27-10, 28-40, 28-70 metres. Total advance of south head-
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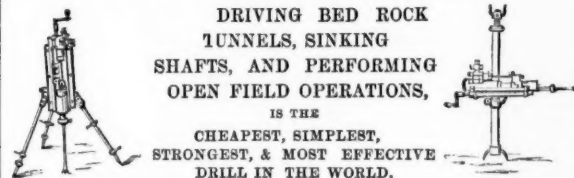
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Mr. BAINBRIDGE, C.E., of the London Company's Mines, Middleton-
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profit on our Nanthead waste heaps amounted last year to £680, besides the ma-
chinery being occupied for some months in dressing ore stuff from the mines. Of
course, if it had been wholly engaged in dressing wastes our returns would have
been greater; but it is giving us every satisfaction, and bringing the waste heaps
into profitable use, which would otherwise remain dormant."

Mr. T. B. STEWART, Manager of the Duke of Buccleuch's Mines,
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pleasure in stating that a full and superior set of your Ore Dressing Machinery has
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become smoother, and those in charge understand the working of the machinery
better, it gives increasing satisfaction, the ore being dressed more quickly, cheaply,
and satisfactorily than by any other method."

Mr. BAINBRIDGE, speaking of machinery supplied Colberry Mines,
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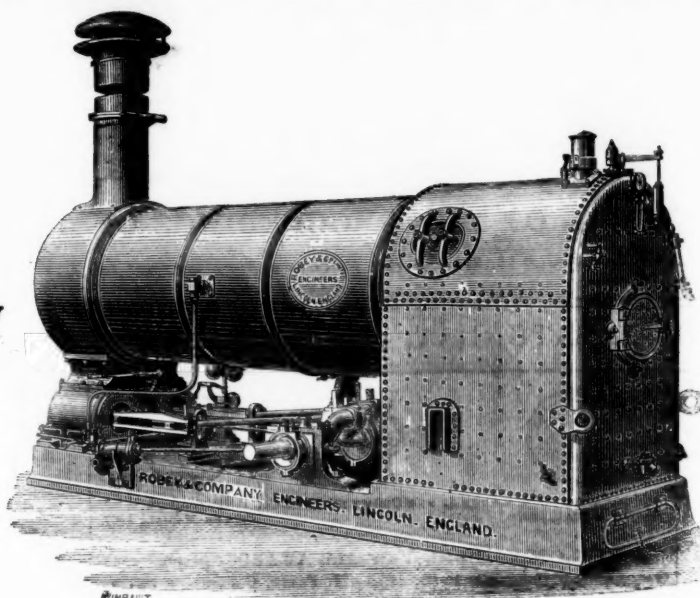
Mr. MONTAGUE BEALE says—"It will separate ore, however close
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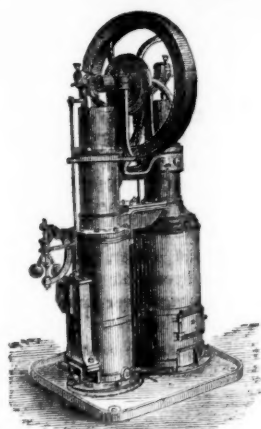
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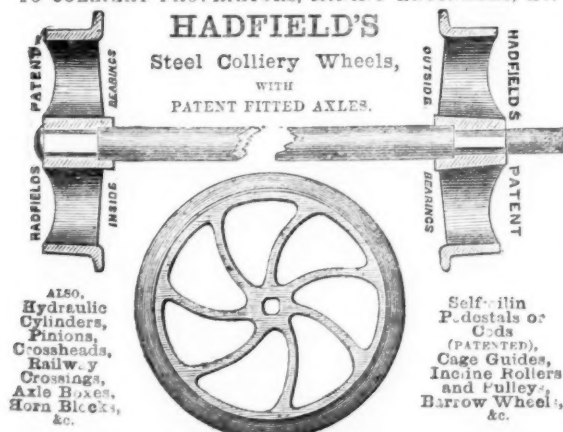
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Original Correspondence.

THE ARUBA ISLAND GOLD MINING COMPANY—No. IV.

SIR.—Referring to my communication of last week, I am warranted in regarding the Island of Aruba as a mining district of unusual value.—1. It possesses auriferous alluvial deposits from which large amounts of gold have been obtained during the past 50 years, the amounts necessarily being limited to those points only which operations have been limited to, and wholly unaided by the modern appliances successfully employed in utilising such deposits.—2. There have been discovered and named some 200 veins or lodes of auriferous quartz, varying from 1 ft. to 30 ft. in width, (say) 2000 ft. in average length, and extending downwards indefinitely. Assuming the average width of 4 ft., linear extent 400,000 ft., and a depth of 1000 ft., the inexhaustible quantity of vein matter reaches fabulous figures. Whilst all well defined veins are auriferous, some of the smaller, as well as others of the largest width, may not produce "pay rock," there will still remain the largest number of veins intermediate in size, many of which would be held in high estimation anywhere in the mining world.—3. The isolated position of the Island frees labour from all external causes of interruption, the salubrity of the climate, to which the short and irregular "wet season" is the only incident of change, the docility of the labouring class, and the moderate wage required, together with the cheapness of living may be summarised as among those advantages not commonly found in gold mining districts.

The importance of these alluvial deposits on the Island has never been duly considered. Here, as elsewhere, in all important gold districts of the world, the precious metal was at first discovered in the detritus or soil. The extent of territory from which gold has been obtained is not left to conjecture. The dug-up and disordered condition of the gulches, aggregating some miles in length, a like condition observable on the sides and shelves or flats of the mountains, irregularly involving many hundreds of acres of auriferous detritus, and the still more noticeable evidences of gold hunting in the two basins mentioned, where several hundreds of acres have received the offcast debris of ledges ground up by agencies which may be, for short, called "natural," and referred from the present back through the infinite past—these suffice to settle the question as to extent of surface likely to be gold-bearing. During the past fifty years a vast amount of work must have been done, and but very little of it that did not pay something for the toil. Associated enterprise or joint-stock companies furnished but little or no money for this purpose. The labourer was dependent upon his own success, and not upon his hire. And this continues up to the present day. During my rides in portions of the island I came across numerous parties of miners working by stealth to obtain subsistence. Their voluntary labour could not have been profitless, and yet be continued.

Sailing vessels from Curacao to New York invariably manifest gold dust from Aruba. It may be urged that the needs of the labourer on the island are so small that very poor ground will furnish him with subsistence. Admitting this to be relatively true, it is to be settled what is rich ground and what is poor ground. A few facts from California experience may throw some light on this matter. An average of 275 cubic yards in Nevada county yielded the average of 7½d. per cubic yard of ground; in Gold Run district, Placer county, 43,000,000 cubic yards of ground yielded 23½d. per cubic yard; at Smartsville, Yuba county, 25,000,000 cubic yards yielded 12½d. per cubic yard; the Sebastopol claims, Nevada county, yielded 15d. per cubic yard from a total of 6,000,000 cubic yards. In Placer county the ground at Iowa Hill yielded 35½d.; Independence Hill, 12½d.; Roach Hill, 30d.; Richardson Hill, 7½d.; W. Hill, 6d. per cubic yard. The richer ground may be quoted as yielding from 4s. to over 2s. per cubic yard. All of these claims were operated by hydraulic appliances, in some instances at a cost as low as 1d. per cubic yard of stuff handled. The average cost of handling (California wages) a cubic yard of auriferous alluvium has been rated at—by panning, 3d.; by rocker, 15s.; by Long Tom, 3s.; and by hydraulic process, 5d. per cubic yard. As an example of poor ground yielding a profit, 43,000,000 cubic yards worked at Gold Run may be taken, upon which the profits exceeded one-third of the gross yield = 40,000d. Having such facts in view, the proposition is not how much profit was made, but how much must have been the average yield per cubic yard of the many hundreds of thousands of cubic yards handled in Aruba during 50 years. The labourers worked for a subsistence mainly, not for wages paid out of imported capital. Using the simplest hand-tools, trenches were dug to the bed-rock, and the stuff deemed rich enough then carried to the side hill, where it was spread out to dry. It was then repeatedly pounded with clubs, and repeatedly winnowed by being poured from a dish on the head of the winnower, the heavier parts falling on a canvas or skin at his feet, the lighter being carried to the side and behind by the air. These heavy residues were then picked and washed in the "bates" (panning) for the coarse and fine gold. These operations inclusive consumed as much labour as the panning per cubic yard in California—five days' labour of one man. In such work two Aruba miners would do no more than equal one California miner; hence about 10 days labour were expended in handling 1 cubic yard of ground in Aruba. Assuming the low rate of 7d. as the earnings of each day, an inadequate compensation, we reach a value of 6s. per cubic yard as the probable yield of the ground already worked on the island. Against this, it must be considered that to gain the cubic yard handled perhaps 5 cubic yards were thrown away as too poor to work, we have then an average value of 1s. per cubic yard for the whole mass, without reckoning anything for the contents of the five thrown aside. As in selecting ores the selected are the richest, but yet never aggregate an amount equal to the gross value of the refuse, so here a certain value would remain distributed throughout the mass, unattainable through a costly process, but easily accessible when the whole would be submitted to hydraulic washing. It would appear, therefore, safe to assume a value of 1s. per cubic yard for the great body of alluvium, which exists in indefinite quantities on the island. Although in part conjectural, the exact amount of work actually done in the rude and partial way described, and the large aggregate of gold procured during a period of 50 years, warrant the calculation, whilst yielding to it the strongest probability of an under rather than of an over estimate.

During my stay on this island I intentionally refrained from obtaining data on this important matter, for the reason that the manager had set a gang of men at work experimentally, with whom I did not wish to have the appearance of interfering. I have been informed that 1 oz. of fine placer gold was received at the office, but no report of the actual yield, the cost, or any other detail calculated to give information on the subject. The placer mines were condemned, however, and one is left to wonder why all the yield, the coarse (small nuggets) as well as the fine gold, was not accounted for and accompanied with the statement of such facts as would sustain his conclusion. Having seen these men at work, as well as the yield long before they ceased working, I was well satisfied that exceedingly rich ground would be required to make it profitable to the company, whilst the yield was sufficiently large to warrant an examination of the ground with a view of working it in the large way by the hydraulic process. This experiment, inconclusive and unsatisfactory as it appears, taken in connection with the constant shipment of placer gold now from the island, give additional force to the above calculations, hypothetical as they must be considered.

The magnitude of the hydraulic operations carried on in California is well worthy of consideration as an evidence of the immense industrial interest involved in the winning of gold from deposits in many respects similar to those on the Island of Aruba. In 1873 there were 775 mining ditches in 25 counties, aggregating 4863 miles in length, and furnishing, during a day of 10 hours, over 300,000,000 cubic feet of water. From half to two-thirds of the bullion crop of the State are thus gathered. The same remark applies to gold mining elsewhere—the largest product is that obtained from the alluvial deposits. The cost per cubic yard, as stated, may be as low as 1d., the average being rated as high as 5d. per cubic yard of ground handled. Beside the possession of workable ground there are two essential considerations—the access of water in force, and adequate dumping ground for the spent material. From what has been said

it must appear that workable ground exists in Aruba in large area. It remains to be considered as to the other requisites—water in force and dumping facilities. Beyond premising that neither of these conditions involve difficulties either physically or financially in view of profitably working the great bulk of the best ground on the mountain sides and in the gulches, I do not feel called upon to volunteer special information. Suffice it, I have visited and studied the situation with that in view, and deem it prudent under existing circumstances not to go further than the expression of an opinion. The profitable working of the basins, perhaps the largest and richest areas, involves contingencies not so readily surmountable. The system, however, could be so designed as to utilise their wealth wholly or in great part profitably, whilst at the same time the largest portion of the outlay for plant could be used concurrently and subsequently for handling the vein rock so abundantly existing in the numerous lodes distributed throughout these areas.

The quartz veins, although numerous, valuable, and inexhaustible, should at first have been relegated to a secondary position in the industrial development of the mining interests of the island. The proper and profitable exploiting of the gold-bearing alluviums would not only have given time for the dead-work preparation of the mines, but would have speedily furnished the means to work them on a scale commensurate with their capacity and the quality of the ore product, at the same time showing it to be entirely practicable to have operated conjointly by using a large portion of the plant in common. After the exhaustion of the placer nearly the whole outlay would be continued in the economical reduction of the quartz. When a sound system of development, such as is here briefly indicated, can be entered upon the position will have been gained from which success may be commanded. Had it been the good fortune of the company in the outset to have secured intelligent and trustworthy advice with regard to the character and value of the ores, the feasibility and probable profit of working the gold-bearing alluviums, supplemented with safe suggestions with regard to the use of the wind as a motive-power, a positive success or a decided failure would have been satisfactorily and conclusively reached before exhausting the funds first in hand. A recurrence to that which should have been done in the past might have utility even now could the misadventure be converted into a warning. Unfortunately, such an advantage does not seem yet to be apparent in the recent determination of the board of direction. Were it otherwise the duty would be a pleasant one to respectfully suggest the best ways and means for remedying the past by ensuring a progressive advance towards success in the future. Under existing conditions, however, the only course open is that of respectfully remonstrating against the expenditure of money from which no substantial benefits can be derived.

1.—With reference to the development of five mines "in the immediate vicinity of the mill," there can be no objection urged if, in a technical sense, the development of mines consists in "preparing roads, timbering and sinking shafts, bringing ore to mill, and assisting in mill day and night." During five months, 13,000 days' labour, costing 875s., are thus characterised, which, to say the least, defies criticism. As the mines named are "in the immediate vicinity of the mill," and mainly on the level from which roads have been made, or are not required to be made, at any cost, and since little timbering is now or can be needed in that time, and no ore to be brought to mill until it is mined, all of this may mean mining development. This "expert" way of stating a mining estimate is, however, alarming, and leads one to expect inexactness. Nevertheless, it is to be hoped that legitimate sinking and timbering of shafts, drifting, and stoping, and the supplying of proper hoisting means, embody the purposes for which the 875s. are to be expended.

2.—With regard to the machinery. It is proposed to spend near 6000s. to complete and start the machinery, including the purchase of two Husband's stamps, four grinding pans, two Cornish boilers, and some supplies. The old boilers are also to be repaired at a great cost, in order to have on hand some 130 to 160-horse steam capacity for a 60-horse engine. Presumably the Husband's stamps are to be substituted for the present 20-stamp battery, so as to gain 50 tons per day crushing capacity. The concentrating machines are to be dispensed with also, and the internal arrangement of the mill remodelled extensively. None of such particulars are vouchsafed, perhaps for brevity. The meaning of all, however, is this—a thoroughly good mill is to be completely upset and ruined to try an experiment with "two new Husband's stamps." The bare suggestion passes all toleration. Should any measure of success attend the experiment, which is very problematical, the whole structure must be abandoned at the earliest moment by reason of its general inefficiency, inconvenience from want of space, and the per ton cost of handling the ore. In brief, however the experiment ends, a mill costing then fully 30,000s. will be abandoned as wholly unprofitable. Two years ago next month the London management was advised not to complete that mill, as it was too costly per ton and limited in capacity to be profitable, considering the ores that were to be treated, rather expend the money in a new combination of machinery calculated to treat ores cheaply, the capacity of which could be harmoniously extended as the mines were developed. That advice in both respects is now, and will again be pertinent two years hence when the third fiasco is reached. The present mill properly supplied with machinery has not the internal space to handle 30 tons of ore with any convenience. It would be worse than idle to attempt the handling of 50 tons daily. Nevertheless, it is better to have an inconvenient but a good mill of the former capacity than a worthless one botched and bogged to work the latter amount inefficiently. If salvation depends upon "two new Husband's stamps" by all means give them a fair chance. Build a new mill properly, planned for them and the intended auxiliary machinery, with ample space for convenience of labour. Then add also the grinding pans and independent amalgamators and settlers to the old mill. The whole cost of both will be scarcely more than the indefinite outlay in experimental alterations as now proposed, the result in one case, two good mills, joint capacity 80 tons per day, in the other one botched and worthless mill, the cost in both cases nearly the same. Expensive stamp mills are not toy houses, to be built up, torn down, remodelled, added to, and abstracted from as fancy may dictate.—10, York-street, St. James's, Sept. 20. G. W. BAKER.

THE PROJECTED AUSTRALIAN TIN MINING COMPANY.

SIR.—A Glasgow friend of mine has asked me to give an opinion respecting the Victoria Stream Tin Company (capital 100,000s., in 20,000 (5s.) shares, the offices of which are in Bucklersbury), and considering that more than one person may be interested to know about this scheme, I beg you will publish in the *Mining Journal* what I have to say respecting the subject. The company is formed to purchase property belonging to John Wood, styled in the prospectus "The Honorable," and "Minister of Railroads," and Dr. L. L. Smith, of Melbourne, for the sum of 88,000s., leaving a balance of capital of 12,000s. which will not be required, as, according to the prospectus, "No engines or costly machinery are required, nor will shafts or levels be needed." In point of fact nothing is wanted but the purchase of the property, which has been hanging in the London market for the last 18 months at least to my knowledge, during which time the proprietors, according to their own showing of profits, on only 8 tons of ore per diem, have lost, by keeping the property idle, 70,000s., and yet, knowing that 46,365s. per annum can be made with no outlay, they are magnanimous enough still to stick to their original terms, and modestly only require 88,000s. It is to be hoped that "The Honorable" John Wood and B. G. Davis, Esq. (why is he not honorable as well?), Chairman of the Committee of the Legislative Assembly, have the fact of Governor Schenk, of Emma Mine notoriety, before their eyes. Is there an average of 80 lbs. weight of tin ore per cubic yard to be taken out of any of the richest tin fields of New South Wales or Queensland? I say unhesitatingly, "No; and such has never been known there." Yet Mr. Grierson (foreman) has obtained that quantity, according to the prospectus, "from the banks and bed of the river."

Now, 80 lbs. weight of tin ore is worth about 30s., and a cubic yard of earth will cost 1s. to get and wash away. One man should get and wash at least 10 tons per diem, therefore a single day's work

of one man should give a profit of 14l. 10s. The ore is readily saleable in Melbourne, and the work of 20 men would return the whole of the capital in one year. Now we can see the thoroughly unselfish character of "the Honorable" John Wood, Dr. L. L. Smith, B. G. Davis, and Thomas Lambert. Why? They could have helped themselves out of the property if they had liked to any extent, yet they have nobly held it intact, to their own honour and glory, while the dilatory English or Scotch shareholders are making up their minds to join with them.

British mining speculators have had some experience during the last few years, and have found the generosity of mine holders rather too expensive to desire to pay again. As for myself, I should be sorry to see Australian mining schemes degraded to the same degree that American have been, therefore I cannot refrain from drawing attention to the above project. A QUEENSLANDER, Glasgow, Sept. 21.

SOUTH AUSTRALIA.

SIR.—In my last letter I informed you of an unaccountable attempt made by certain parties in Parliament, urged on chiefly by a cynical individual outside, to throw discredit on the account of the mines of South Australia, given in the Handbook of the Colony, recently published by authority of the Government. This patriotic little coterie has not been very consistent with itself; it has taken up two contradictory lines of action, the one to prove (if possible) the account of our mineral wealth to be greatly exaggerated, and the other to endeavour to prevent Messrs. Cooke, M.P., Lawrance, and Harvey from retaining the mineral lands (which have been granted to them by the Government on the usual terms of payment), on the ground that such exceedingly valuable lands should not be alienated to English capitalists, but should be retained by the colonists for their own especial profit. The letters which appeared in the Adelaide papers, signed by persons who were really acquainted with the Far North, fully endorsed the correctness of the accounts given of the mines, and abundance of evidence of a like kind can be obtained if necessary. The opponents to the progress of the colony have, therefore, obtained the appointment of a Select Committee of the House of Assembly to enquire into the validity of the licenses to search for minerals (granted to Messrs. Cooke, Lawrance, and Harvey), and to try and show that Mr. Cooke, in his position as a Member of Parliament, brought undue influence to bear in order to obtain those licenses. I believe the committee will signally fail in their object, though the majority are decidedly prejudiced on the subject. I am not aware of the course the examination of witnesses is taking, but I have good reason to surmise that the committee will endeavour to collect evidence against the mineral wealth of the North; at the same time they are trying to upset the licenses, lest the colonists should be deprived of so valuable a birthright. I believe a good deal of the evidence will be like that with which the Yankee lawyer saved a client who was on his trial for horse stealing; two witnesses swore positively that they saw the man steal the horse, so the 'cute Yankee produced four witnesses (?) who swore as positively that they did not see the man steal the horse. The lawyer contended that the weight of evidence was in his client's favour, and—of course the intelligent jury acquitted the prisoner. So, for every witness who has seen the mines in the Far North, it is easy for the Select Committee to find fifty who have not seen them, and possibly do not believe in them.

It is difficult to understand why men holding respectable positions in the colony, and who might be supposed—by those who were unacquainted with their narrow-mindedness—to be capable of some little feeling of patriotism, it is difficult, I say, to understand why they should adopt such an extraordinary course as they have. Suggestions might be given which would possibly turn the tables on these gentlemen, but I think their apparently inconsistent action is the result of a deep laid scheme, and if they could succeed in proving either of the points they are aiming at their object might be gained. It would be more important for them to upset the licenses than to prove the accounts of the mines exaggerated; but if they cannot do the former, and succeed in hunting up a lot of negative evidence on the latter point, like that of the Yankee lawyer, they, perhaps, expect to frighten the English capitalists, and so prevent the carrying out of the scheme for working the mines by an English company, in which case the lands might fall into the hands of South Australian colonists. But if this be their policy it is a very short-sighted one; they ought to know that the more extraneous capital we get introduced into the colony the better, and even if English or foreign capitalists derived all the direct profit, however large, from the working of the mines, our local trade and commerce must benefit to a large degree. The history of the Burra and Moonta Mines shows this clearly. In thirty-one years the expenditure of the Burra Mining Association was 1,982,000s., of which 1,568,000s. represented wages. The Moonta Mines in 14 years produced 255,000 tons of ore, which realised 2,760,000s., of which 928,000s. of profits was divided amongst the shareholders. Of course a large amount of the balance was expended in machinery, but by far the larger proportion was paid in wages. Wages must be for the most part spent in the country where they are earned, and it is well known that mines afford indirectly employment to vast numbers more than the miners who are engaged in working them.

It would be strange, indeed, if a country like this, abounding as it does over thousands of square miles in extent, with indications of great mineral wealth, should produce only two mines like the Moonta and the Burra. Very little has yet been done to prove the mines in the Far North, with two or three exceptions, and even mines that would undoubtedly pay with railway carriage have had to be abandoned for want of that facility. On the Moonta Mine itself new discoveries are frequently made, and one has been made within the last month which promises to prove a valuable lode. In the neighbourhood of the Wallaroo Mines, where the ground has been pretty well tried for many years past, a new discovery of great value has been made on the property of the Devon Consols Mining Company, and at the Burra there seems every probability of the old mine paying to work at a much greater depth than where operations were suspended years ago. Thus there is plenty of encouragement for the prosecution of mining in this country, where, considering the vast extent of our mineral deposits, comparatively little has been done to develop them. Practical men who know the Far North well say that if there were facilities for conveying the produce of the mines to a shipping port, South Australia would rival Chili in its exports of copper, while the quality of the metal is far superior to the Chilean.

It puzzles me to think why what has been a matter of notoriety for the past fifteen years should, by certain obtuse members of Parliament, be thought to require reiterated proof, and still more why others allow the country to be put to needless expense from time to time at the risk of postponing what would promote the speedy development of its most valuable resources. It is the opinion of many persons in the colony that but for the unreasonable opposition excited against the construction of the railway north from Port Augusta the line might have been in operation ten years ago. And now, when a Government measure for making the railway has passed both Houses of the Legislature, a Select Committee is appointed ostensibly to enquire into the validity of certain leases, but, as it is believed, with some other object also. Some persons assert this object is to hinder the construction of the Port Augusta Railway, but I cannot bring myself to think that can be it, for the popular voice is so universally in favour of that important work, and the evidence as to its importance to the colony is so overwhelming, that it is difficult to believe that any sane man would attempt to do anything that would postpone its commencement for a single day. Another suggestion has been made, which is that the parties interested fear that the shipping trade of Port Adelaide will suffer when the opening of the Port Augusta Railway will increase the trade of the latter port. But it could only suffer by the transfer of the trade of the Far North entirely to Port Augusta, only a portion of it being now confined to the northern port. As the colony progresses Port Adelaide will gain its full share of the increasing shipping trade, and need not be jealous of the outports.

There is no doubt that Messrs. Harvey, Cooke, and Lawrance did a smart thing in securing so large a number of mineral claims, in-

cluding many of known value—probably all of them well worth having, and worth some expenditure in testing. But the same chance was open to anyone else who might have chosen to take advantage of it, and it was a matter of notoriety that the Port Augusta Railway Bill was likely to be passed, and would add to the value of the mineral claims. It is easy to understand now how some jealousy is felt by those who did not exercise similar foresight, but they have no right to complain; the requirements of the mineral laws and regulations have been complied with, and though the gentlemen named have secured the pick of the mineral lands at present known in the North, there is plenty more country worth searching for copper and other metals. What proportion do 10,000 acres bear to as many square miles of country. I know there are mineral deposits unknown to Messrs. Cooke and Lawrence, and which will be worked when the railway is constructed, and when that is done we shall have many more discoveries in the North brought to light.

Since writing thus far I have had the honour of being examined by the Select Committee above-named, and though it would not be proper for me to publish any comments on the case at present in the colony, yet, as the report of the Committee will probably be brought up before this reaches you, I see no harm in making a few remarks on the subject. I am inclined to think that the object of the Select Committee is partly political, the Handbook having been published by authority of the late Government. I do not think a single member of the committee has seen any of the northern mines, and their examination of me was evidently intended to make me contradict what I had written, or to draw from me some admission, or chance expression which they might use against me, or in disproof of my twice published accounts of the mines. I trouble you with these details, because I believe accounts will be sent to England for which these persons who feel any interest in our mines ought to be prepared. In fact, if I am not misinformed, such has already been done. The committee appeared to think that my account was intended to convey the idea that every copper lode discovered north of Port Augusta was sure to prove a rich mine, and that every mine opened was certain to pay if a railway were constructed to carry the ore to a port of shipment. My intention was nothing of the kind, but I nevertheless reiterate the assertion that our North country is wonderfully rich in mineral wealth, and that it offers great inducements for the investment of capital in legitimate and carefully managed mining operations.

Before concluding, I ought in justice to some members of the Select Committee explain that I do not believe they are all actuated by similar motives, and consequently are not all to be included in the remarks I have made as to "obtuse members of Parliament, opponents to progress, narrow-minded men," and so on. These remarks, though applicable to some members of the committee, were intended rather to refer to those persons who first incited them to take action. I have little faith in their pretended anxiety to prevent English capitalists from being misled, and so induced to invest in our mines—their zeal lies in some other and occult direction. It would soon be seen when our northern mines commenced working that plenty of persons in the colony would be glad to take shares in them. English capitalists will surely take every precaution, before investing, to satisfy themselves as to the value of that in which they embark their money.

Adelaide, Aug. 10.

CHONTALES CONSOLIDATED MINING COMPANY.

SIR.—It is not my duty to answer the various statements, or the opinions drawn from them, by anonymous correspondents, however incorrect they may be, but your correspondent, "W. B. P.," in his letter published in last week's Journal, has made a statement so directly contrary to the fact that I think, as secretary of the company, I ought at once to correct it. He states that our "home expenses amount to between 6000 and 7000 a month," whereas the published accounts for the last four years show an average of 354s. 1s. 11d. per annum, or equal to 600s. 10s. 1d. per month under this head.

Gresham House, Old Broad-street, Sept. 26.

CHONTALES CONSOLIDATED MINING COMPANY.

SIR.—I submit the golden opinions of three of our managers upon the value of our property, and submit them for careful consideration. With such resources as we are at present possessed of, any quantity of auriferous ore, sufficient machinery for treating 3200 tons per month, and capital to pay our way, I ask the question of shareholders, after the mismanagement that has taken place, if it would not be desirable that a managing director be appointed to look after our interest? I have before me a list of the shareholders, among that list there are some who hold over 1000 shares, is there any gentleman that a shareholder can suggest duly qualified and thoroughly acquainted with mining operations as an addition to our board of directors? Our annual meeting will take place before many weeks have transpired, and if anything is done there is no time to be lost. The Bristol shareholders would be glad to receive any suggestions and would co-operate in carrying them out. Any letter addressed to the initials and address below will receive attention.

Exchange, Bristol.

W. B. P.

Mr. Betts in his letter, dated Nicaragua, Feb. 2, and presented at the half-yearly meeting, March 1875, gives an account of the property:—"On the Concho lode it possesses a length of 642 yards in the sets of Concho, Estrella, San Benito East, and San Benito West. On the San Antonio lode a length of 530 yards, on the San Sebastia lode a length of 80 yards, and on the Javalote lode a length of 140 yards. In the Paron sets, making in all a length on lodes of proved value of 1652 yards, or a little over four miles. There are besides several more sets in which the lodes have not been tried." Is this work written by Mr. Betts, on the nature of the property, he goes into some particulars in respect to the property owned by the Chontales Company. There is a statement to this effect, that in one mile of the company's property there is a vein of gold ore in about every 50 yards.

At the annual meeting, 1874, at which Mr. Betts was present, in reply to the question as to the extent of reserves, he stated there were many millions of tons to be opened out. Taking good and bad together, it would average 4 s. 4 d. per ton.

Mr. Smellie's opinions of the mines were expressed by our noble Chairman at the half-yearly meeting, March, 1873, if they could at some future time be set a more extensive plant at the Paron Mine, Mr. Smellie believed the property would be second to none of its class in gold and silver.

Our present manager, Mr. Dainton, writing from Nicaragua, March 4, 1875, states that the property owned by the Chontales Company consisted principally of a number of auriferous and argentiferous lodes in the mountains of Chontales. From its geological character, there can be but little doubt of the permanency of the veins. The lodes have an east and west direction, but varying in their dip, being from 3 to 30 to the west. It is a noticeable fact that with the immense lodes there is scarcely a portion which does not contain some of the precious metal.

Regarding the Paron, he says: "I have carefully examined this property. With no exception have I ever seen anywhere such evidence of an immense scale as there is here. It is impossible to estimate the size from surface, there being millions of tons of broken quartz deposited on the back of the lode. The whole contains more or less gold and silver."

FOREIGN MINES—CAUSE OF FAILURES.

SIR.—I am not one of those who advocate foreign speculations whilst we have good sound investments at home, and far less risky, but since speculators will go into such concerns the only thing we can do, as practical men, is to give them suggestions as to how they should act in order to avoid such miserable failures as are continually taking place. But how are such failures to be avoided? Perhaps there are no means in existence by which they can be altogether, but I am firmly of opinion that they may be reduced to a considerable extent by using the means which are at hand. In order to do this we have to search for the cause, and when this has been discovered it will be a comparatively easy matter to effect a cure. Several causes have been suggested by your various correspondents, and no doubt most, if not all of them, play some part in bringing about undesirable results, but the longer I live the stronger my conviction becomes that the prime cause has been the sad want of sound, thorough, practical, and intelligent miners to manage the mines. How seldom, indeed, is such the case? Men are sent out to take charge of mines who know nothing, practically, of mining. They may have attended a course of lectures at the Royal School of Mines, have passed successful examinations on paper, and have received the diploma of M.E., and yet have not the qualification to manage a mine. I have nothing to say against the School of Mines—on the contrary, I would, if it were possible, bring such schools within the reach of every miner—but I do affirm that no man can learn mining in such a way as to be of any practical use until he has gathered his experience from the mine by being himself underground. This fact seems

to be lost sight of by boards of directors, and hence they employ incompetent men to take charge of their concerns, and the result is a decided failure. Why, Sir, I could fill a list of such cases that would go a great way in filling a column of your paper.

How many of such cases may be reckoned in America, where the Americans coming after have made the mines pay handsomely. No "drawing room miners" (as Mr. H. Sewell calls them) for them; they will have practical, go-ahead men, and for this reason they can laugh at English companies coming over, making great attempts, and then in a year or two, after spending all their capital in the most unminner-like manner imaginable, leaving only reminiscences of folly and madness.

I have been often amused at the advertisements for managers which appear in the Journal from time to time. Sometimes a man is wanted who must be an assayer, surveyor, mechanic, and everything else but a practical miner; at other times a man is wanted who understands a certain branch, perhaps something relative to a branch of mechanics, and directors will sacrifice the most important qualification for some simple thing which any intelligent man may acquire in a week, even if he had no practical acquaintance with the thing before. For example, in last week's Journal an advertisement appeared for a man to take charge of mines in Spain, and it is stated that he must understand the working of a rock-drill. Now, do they expect that a man can take charge of the mine, and at the same time superintend, personally, the rock-drill? Such a thing is preposterous in the extreme, and yet it is very likely that these directors will engage a man with the idea that because he has used a rock-drill for a little while, he is the right person for them. It is quite right enough for a manager to understand such branch operation, but no man could personally superintend such operation without neglecting that which is infinitely more important. But any intelligent man in a few days could acquire the knowledge of such machine and its use, although he may never have seen one before. Whoever this company is, I would caution them against employing a person who has not a thorough practical knowledge of mining, although he may have had ever so much experience of rock-drills, for they may spend ever so much ground, and yet if that ground is not spent in the proper place an absolute failure must be the result.

Let mining companies engage the right men for conducting their affairs and they will not have to complain of so many failures. What do you think, Sir, of the manager of an important mine saying that we may as well work in one place as another as long as we have a lode to work on? I am sure that you will agree with me that such a man should be struck off the list of mine managers, and some more common-sense person put to fill his place. If such men succeed it must be by the very chance, and yet we have such men! Whatever a man's knowledge may be, nothing can make up for the lack of personal experience, which can be obtained only in the mine. When mining companies are wise enough to see this we shall see greater prosperity; confidence will be restored, and, instead of weeping continually over failures, there will be rejoicings over dividends.

SMOKE NUISANCE.

SIR.—With reference to Mr. Banfield's letter in last week's Journal, recommending the use of anthracite coal to obviate the nuisance of smoke, we have pleasure in directing attention to Erskine's patent smokeless furnace and economiser, the novelty in which consists of peculiarly constructed fire-bars resting directly upon tubes arranged in such a manner that heated air is admitted into the furnace in such proportions as to secure combustion of the gases before the smoke is actually made. The air passing under the fire from front to back, returning through the tubes, is so greatly heated as to generate steam quickly and give a steadier supply; the bars also afford more air space, which secures the entire consumption of the fuel, and great economy of it. By the use of this invention the commonest slack or any kind of fuel can be used and entirely consumed, and great economy attends the use of it, as is proved by the testimony of the Manchester, Sheffield, and Lincolnshire Railway Company and many other references. Anthracite is not only expensive, but difficult to obtain in many districts.

Victoria street, Birkenhead, Sept. 26.

SUTCLIFFE BROS.

ACCIDENTAL EXPLOSIONS IN BLASTING.

SIR.—Much has been written and said about the fatal accident at West Basset, and "Copper Rammer" seems from his letter to you desirous of impressing miners with the notion that if he had been in use instead of an iron rammer the explosion at West Basset could not have taken place. I have yet to learn that copper is less dangerous than wood, and how does he account for the accident which took place shortly before those at West Basset, at the tunnel now being driven by the London and North-Western Railway Company on their new line to Festiniog, where a charge of tonite exploded, and the wooden rammer which was being used for charging the hole was blown through the body of a workman and killed him? Tonite is not so explosive as some people represent. Ordinary prudence would require that every explosive should be treated with reasonable care. The very term *explosive* ought to convey to every mind the knowledge that the article, whatever it may be, is capable of exploding, and that it requires to be carefully handled, or it may explode when least expected. That some explosives are more sensitive than others is well known, and the returns of the Government Inspector show considerable light on the subject. From the report of Mr. Le Neve Foster, Inspector of Mines for the Cornish and Devonshire district, it appears that four fatal accidents arose from the explosion of gunpowder during the process of tamping in 1875, and of these two were from tamping with iron, and two with copper bars, while none took place where dynamite was used, hard tamping not being required with it, and of non-fatal accidents during the year five took place, while the very dangerous practice of picking or boring out holes that had mis-fired was going on, a process which is not required when dynamite is used, and which no one who values life ought under any circumstances to permit. The delay and cost of drilling a fresh hole on a mis-fire when gunpowder is used is nothing compared with the too probable sacrifices of life or limb from the attempt to pick out the hole to save a charge of powder. When dynamite and soft tamping are used a second charge fired on the top of, and without removing the soft tamping, will fire the original charge, and all danger of picking out or interfering with it is at an end.—*Truth, Sept. 27.*

CAUTION.

ROCK-BORING MACHINES.

SIR.—The "hard Pennant" sandstone referred to by your Cornish Correspondent is composed of coarse quartzose grain, loosely cemented together. The stone is therefore one which may be rapidly bored, whilst, from the bedding of the rock at Portswear, the stone itself is removable in considerable quantities by means of a few well directed shot-holes. The "Geach Borer" alluded to as the "invention of a Cornishman" is really no distinct invention. It is the McKean drill fitted with balance-pistons instead of a semi-rotating valve, and a Burleigh cam and tappet to reciprocate these pistons. The tool holder is similar to the "head and shoe holder" of a Californian stamp. For the purpose of repairing the borer at the Portswear tunnel three fitters are continually employed, taking their wages at 12s. daily, or 97s. 6d. weekly, will amount to 7s. per yard, or 14s. per fathom of ground. If each borer is to be redeemed in the drive of (say) 250 yards of gallery, and cost 50d. each, it will add another 4s. to the yard of ground, or the fitting and redemption of machines will together amount to 22s. per lineal fathom.

THE VALUE OF SAFETY-FUSE.

SIR.—When I was a young man a mine agent, named Bunly, who lived near Goldsmithy, on returning to his home from a public-house in that village, being in a state of intoxication, fell into a shaft. The mine was idle, and the shaft was full to the top, or nearly so. The body did not rise, so the friends procured a barrel of gunpowder, intending to explode it a few fathoms under the surface with a view by disturbing the water to set the body free from timber (by which it was supposed to be detained) that it might rise

to the surface. In that day the safety-fuse was unknown (not invented), so the tin-plate tubes, then in use in mines, were filled with powder attached to the barrel and let down—probably 10 fathoms. But the plan did not succeed, owing no doubt to the entrance of water through the joints of the tubes. Therefore, the body remained in the water till the mine was set to work about 20 years afterwards.

If the safety-fuse invented by Mr. Bickford had been known at that time it is not improbable that the body would have been recovered, because that will ignite gunpowder at any depth under water. It is one of the many valuable inventions of the third decade of the 19th century.—*Truth, Sept. 25.*

R. SYMONS.

THE NASCENT COPPER COMPANY.

SIR.—After three weeks' letter writing, I have to a great extent exhausted all my information on both company and process, and, therefore, before abridging the correspondence invite my readers to permit me to treat in a shortened manner on the subject of purchase and sale of ores in the future as compared with that of the present, the resulting effect by the alteration thereof, and the noticeable change in the welfare of the labouring class made thereby. Mines are opened up, machinery is bought and erected, and after working for sufficient time to prove the existence and value of lodes are offered for sale. Although promoters ought to be paid for the trouble and expense to which they are subjected, still the amount of cash disbursed on the property itself is very often too small to be of actual benefit, and at the collapse the working miner is kept out of his wages more than likely for some time. To all who understand mining in the least is known the fact that the agents always hold a certain time in hand (generally a month), so that a new man has to wait for two months before he is reimbursed, and even then to the agent of one month only, the second month's work being paid in the third, and so on. Now, I contend that in extensive mines, or where a large number of workpeople are engaged, although almost impossible to pay up to date, still it is an easy matter to do so by the seven days, quite enough time being thereby allowed to make up the men's accounts. In the cases of tribute and a few others, where the captains are unable to do so on account of the work not being sampled, it may be somewhat different. Still, on reading further, they will see that these petty annoyances need not occur, and if they remain it is entirely through their own fault. I often wonder why miners submit to the stringent rules put forth, until it was found that the labour market being so glutted it rested with them to either abide by them, starve, or emigrate, the last being a favoured resort. Good men are scarce, and I say that we cannot afford to lose any more. Ireland has been fairly decimated through other lands offering inducements to the poorer class, and Cornwall is no much better, and the clergy and others have endeavoured fruitlessly to stem the current; under these circumstances it rests with them whether my advice be taken or not—if it is, I consider it most probable that in the course of a very short time the appearance of the English market would be such as to bring many of the men back to the old country again, and all would soon be in a flourishing condition.

Let me describe my ideas. Look at the operations of dressing without going into the breaking, raising, spalling, cobbing, picking, crushing, and jiggling business (already laid forth). I will hasten to the point where, being ready for disposal, the parcel of ore is carried or barged to the quays, and received by the renter or owner of the same, whose men are engaged to place the ore, according to quality, in certain piles, for doing which a certain sum is paid—about 3s. per ton. After resting here for perhaps a month, persons deputed by our large smelters attend to sample. This is done by the several parcels being cut across two or three times, and a quantity taken therefrom, and considering that the number of samples is sometimes very large, and that they are not afraid of taking a goodly quantity away for testing, the amount of ore remaining is certainly somewhat materially lessened. It must be remembered, likewise, that the miner has to find comrades to cut the piles in any manner the smelters may desire to have it done, and, after the arduous task, the gentlemen adjourn to the dinner the worker provides for them. After an absence of perhaps a fortnight these individuals reappear in Cornwall, assembling at the head hotel in the town where the sale is to take place. The different piles are then put up to auction, and disposed of to whomsoever may offer the heaviest price. The sale may seem fair enough, but it must not be forgotten that there is a combination of smelters, outsiders not being permitted to purchase, even if they would pay twice the amount.

The miner, likewise, has no remedy if the price offered is lower than he considered reasonable; he must accept it at the reduced figure; it may appear anomalous to those unacquainted with the secret that, notwithstanding the cost of searching for, raising, and dressing ores, the expenses of carts, quays, and samples, and return charges which are deducted from the price offered, and the final settlement by bill at a long date, miners prefer putting their produce in the public markets in this way, well knowing that these reductions will take place. An instance of this sort came under my own notice. A person had a batch of ore for sale—a small lot of about 30 tons—and having expressed a determination to put the same in the ticketing we made as good an offer as we possibly could—that is to say, 17s. per ton. No, he thought he could do more; and, notwithstanding all persuasions to the contrary, he sent it to Truro, and got 6s. 6d. per ton for it, besides having to pay cartage dues and return charges. The loss was a hard one, but he did not feel in any other way than that it served him right, for if people are so obstinate they deserve to be shown their error. If we could have made a good profit out of that ore—I think it made 3 per cent. copper and 30 per cent. arsenic—but being poor I suggest the smelters could only mix it with very rich, and, therefore, was doing a favour, to a certain extent, in buying it at all. The present alone in it would more than cover the cost. However, this person is not alone in his obstinacy in this respect, for I believe a Cornishman will not forsake the old method, because it is considered perfectly safe, and the money sure.

Having so far endeavoured to show how the adventurer is served and through him the miner, let us consider how an alteration can be made that will prove beneficial to all. In the first place, the combination of smelters ought to be disturbed. If all is fair and above board why will they not permit outsiders to join them in offering? This is to be done if all those who profess to be interested in the well-being of the poorer class will assist, if in ever so small a way, in the following manner:—This company is established to reduce ores by the wet method—that is to say, instead of crushing wholly and solely by fire, to use liquids as well as fire. Our mode costs from 12s. to 14s. per ton at the works, which may exceed 20s. in such parts where the expenses of transport are heavy. On the other hand, smelters cannot manipulate the same stuff under 30s. or 40s., therefore, as far as the nascent process is concerned, there is at least 16s. in its favour. Besides this, smelters cannot work material containing less than 3 per cent. of copper profitably. The contrary, should be decidedly happy if we could be kept going with that class, or even lower, in which case our gains would be large and our returns rapid. Again, from the small cost for treatment by our system, we should be in a position to offer a far better price than can at present be obtained; cash would be sure and immediately forthcoming; mines hitherto abandoned from the poverty of the lodes would revive, with its consequent employment of hands, and the ore could be raised and sold without the preliminaries of breaking, jiggling, &c. I put it to those competent to judge whether the saving would not be much greater than is at present the case. My account, as given, is no myth, and if the clergy and heads of the mining community will only assist us in the present of interest in themselves and benefit to the working man, for the support of an enterprise will both directly and indirectly prove that the desire to promote the welfare of the poor is genuine, inasmuch as the fact of this undertaking purchasing ores and minerals of such a class as has hitherto proved unsaleable will be an inducement for persons having the cash to reacquire old mineral properties (which some situate labour), and those not having the ready cash get good wages in picking over the old heaps of mineralised matter now lying idle

There are two or three other mines shortly to be brought before the public, which will offer safe investments for capital. Having to-day been called on to inspect the South Rheidel, I give here a few extracts from my report. The mine is situated on the south bank of the River Rheidel, distant from Aberystwith from five to six miles. The lode worked on varies from 4 to 8 ft. big, and has been sunk 20 fms. from surface, and has gradually improved every fathom in sinking; the lead ore lying on the mine will verify this: 3000 tons would give it a fair trial, and would in all probability prove it to

be a rich and lasting mine. Royalty 1-14th, carriage light, and the roads good.

It is a matter of congratulation that boring machinery is about to be tried at Cwmystwith, where, according to my humble opinion, it will prove a great success; nothing can prevent it. The strata there and in every mine in the county are everything that can be desired for working in, whilst there is an abundant supply of water for every purpose required. With these brought into use, and a little more energy and capital, in a very short time Cardiganshire must stand where it ought to be—at the head of the lead-producing mining counties of the Principality, and of Great Britain as well. If another boring machine was tried at West Cwmystwith we should then have proof positive which is the best machine of the two, Cwmyst, with or the other, whichever they may choose to try, and I do not doubt that both trials would be productive of great good, not only to the parties trying them but to the community at large. In conclusion, I hope the West Cwmystwith Company will have pluck enough to give one of the cheap boring machines a fair trial, and that they will not be outdone by their neighbours.

A new era is about to dawn on us, Mr. Editor. We shall have better mines—get them managed better—pay better dividends, and all parties interested will be better pleased with the produce of Cardiganshire than they have been for the last 20 years, owing to causes which it is not the writer's intention here to go into, but which he might easily explain to the uninitiated if he felt inclined to do so.

Goginan, Aberystwith, Sept. 25.

ABSALOM FRANCIS.

WEST TANKERVILLE MINE.

Sir,—More than once, by your kindness, I have been enabled to call the attention of your readers to this mine, and yet, again, I should like to say a few words about it. Firstly, I would point out the highly satisfactory manner in which it is being opened out. Secondly, to the low price of the two classes of shares affording the means to many of becoming the holders of a good share at a small cost. Three years ago the shares stood at 4 to 4½, and were then considered a cheap share; now the mine is in a very different position, and yet the shares are at 1½. I have just read in last week's Journal the reports of the Roman Boundary Mine, and although I am pleased at seeing another mine starting in the district, I notice (the reporting captains) speak very highly of this, the West Tankerville property. I have had an interest in the company very nearly since it started, and have watched the proceedings minutely, and am very satisfied with the manner it is developing. The captains' reports which appear from week to week are never too "flowery," and nearly all the predictions he makes come true. In the half-yearly report the reserves of ore had greatly increased, and are equal to 1280 fathoms, with ore from 1 to 4 tons per fathom, which reduced into a money value is 20,000l. to 80,000l. The cash balance in hand is 3300l., and then there is the machinery and plant (say) 2700l.; besides, the mine is now making a small profit, as the output is 30 tons a month, which will be shortly increased. The levels are now down to the depth that the other mines in the district (Roman Gravel and Tankerville) became so rich, and as the property is situated in close proximity to these sets, it is not unreasonable to expect a great improvement in value very quickly.

The marketable value of the mine, taking the preference shares at 2½, and the ordinary at 1½, is only 25,000l., which must be far below the price the few facts I have pointed out warrant them to be, that is omitting altogether their prospective value. That there will be a dividend at a not very distant date I feel confident of, both on the ordinary as well as the preference shares, therefore they must be a good investment. Only 1350l. have to be paid to the preference shares per annum before the ordinary take their dividend, this, therefore, requires 110l. per month profit to be made. The small quantity of preference shares will cause them to rise very quickly whenever a slight demand arises for them, as there are only 3000 shares, about 1300 being held by one man. That the mine is under good management both in London and the country nobody can doubt, with Messrs. Crawshaw, Murchison, and Waters acting respectively as chairman, secretary, and captain. A SUBSCRIBER.

CORNWALL—ITS UNDEVELOPED MINERAL WEALTH.

Sir,—It is amusing, if not instructive, to witness the efforts put forth from time to time for the purpose of impressing upon your readers the value of the metallic wealth lying dormant in Cornwall. It is to be regretted, however, that something definite concerning it is not proposed. If there are evidences of such abounding wealth where are the localities in which it is to be found, and who amongst Cornishmen are prepared to take the lead in its development? We hear again and again of the great riches acquired by many Cornishmen from mines, and in view of their present apathy regarding it are led to enquire if success in an enterprise disqualifies for its pursuit; or if its effect exerts a deterrent influence on others? The maxim that "nothing succeeds like success" seems to be reversed in respect to Cornwall. Is it not rather the case that paucity of resource and an adverse market for the produce has necessitated frequent calls to support the mines, and hence the depression which has overtaken them? By whose energy, judgment, and foresight, it may be asked, was the wealth of so many Cornish families acquired from mines during the past, and to which reference is so frequently made in the columns of the *Mining Journal*, if not of the parties themselves? Did they exert themselves to discover wealth, and when they succeeded in doing so did they patriotically invite others to come in for mere nominal sums and share with them the profits? Did they not rather assiduously prosecute their respective enterprises with the view to promote their own individual interests in utter disregard of the interests of others who shared not their toil and outlay, and whom they never considered as entitled to share their profit and reward?

I am aware, Sir, that the times have changed since those good old days, but not much in this respect. Is there not sufficient wealth, energy, and enterprise still in Cornwall to lay hold of some, at least, of these numerous good and temptingly inviting sources of wealth if they were really believed to exist? Does it not look as if—despite the decorative gilding with which they are presented to us through the medium of the *Journal*—that they are generally regarded as being good enough for outside adventurers, but not sufficiently attractive and assuring to entice local patronage and support? If some of the rich individuals of whom we hear so much, whose wealth was derived from mining in the county, were to come forward and liberally endorse, by contributing of their wealth, to the development of these hidden riches, it would do more to influence public opinion in their favour than all the ratiocinations of all the most eloquent prognosticators of the county. If I might venture on a prediction I would say to Cornishmen—If you wish to see the hypothesis concerning the undeveloped wealth of your far-famed county determined, you must put your own shoulders to the wheel, and prove by example and experiment what you are now vainly endeavouring to establish by theory and precept. A public made sceptical by those most impressive of all events—repeated disappointments and losses—is not likely to be readily fascinated by undefined and undistinguished probabilities.

If mining in the county has added so much to the fortunes of local individuals and families—and it has unquestionably done so—what is the reason that, notwithstanding so many tempting opportunities as are alleged to exist, others do not follow their example, and embrace the opportunity of becoming rich also? If the chances of success are still equally good, the spirit of enterprise must have degenerated. The fact that colossal fortunes have been acquired by local talent and energy would, one would think, be the strongest inducement to its continued application, and *vice versa* by parity of reason that the subsidence of local enthusiasm must arise from the absence of sufficiently inspiring objects to excite its activity. The succession of years through which losing mines in Cornwall have been supported principally by outside capital is proof sufficiently convincing that its friends and adherents have been neither few or vacillating, and hence its present decline must be attributed to some other cause or causes than that of a want of capital. I am almost tempted to ask by what agency or instrumentality these numerous embryonic mines of wealth were discovered to exist. Has it been

by the divining rod, or some other art of divination of a more etherealised nature? The opinion of many a true friend to mining is that too much money has already been spent on Cornish mines, and is still being spent. Whether or not it might have been better applied in opening up virgin ground can only be at present regarded as matter for conjecture. It is very natural to incline to the opinion that it would have been so, seeing that the protracted working of the old channels of wealth has resulted so disastrously.

It requires no very large amount of capital to ascertain the prospective merits of a virgin mine in Cornwall if the proper course is taken. It is one of the cheapest places in the United Kingdom for such a purpose. Go to then, Cornishmen, and pioneer the development of the newly-discovered sources of wealth you allege to exist, and the past support you have received will be a sufficient guarantee that the help you need will be forthcoming when you shall have proved that your enterprise displays the requisite merit. But the day seems to be gone for ever when the history of the past can do duty as an equivalent for the present and future. There can be no doubt, but that as the movement of events are accelerated by intellectual force the influence of prestige will be proportionately abridged, and things valued more for what they are and may be than be what they were, but have ceased to be.

MINER.

PROMINENT MINING MEN—PAST AND PRESENT—No. I.

Sir,—It may be interesting to some of your readers to be informed concerning the persons—in Cornwall particularly—who have done a great deal in the promotion of legitimate mining in the county. *Illegitimate* mining is of modern origin, it was unknown in my youth, for at that period persons so disposed formed themselves into a company for working mines—not for selling; and it was very rare to find a mine which was divided into more than 64 parts or shares, sometimes into 32 shares, and sometimes even less. The sale of a share was a very rare occurrence, and when done it was assigned in the same manner as a house or farm by a legal instrument called a "deed."

Speaking of mining men, I will commence with the first gentleman that I knew as such. It was Mr. Richard Tyacke, of Godolphin, commonly called "Capt. Teague." He occupied the farm called Godolphin, containing altogether about 400 acres, the property of the Duke of Leeds, formerly that of the Earl of Godolphin, who resided there occasionally centuries ago. The house was reduced in size about 70 or 80 years ago; by the demolition of 20 or 30 rooms. The farm and house are now occupied by Mr. R. Rosewarne, a very respectable farmer. When I first knew Mr. Tyacke he was the pursuer and manager of a mine, now a part of Great Work, called Wheal Breage, worked for tin, but not very extensively. I believe that he held the situation till his death, which took place in the year 1825; whereupon, I believe, Mr. Silvester, late of Helston (deceased) took the post. About that year the Great Work Mine was re-opened, and Wheal Breage united with it. I do not think that Mr. Tyacke gained largely by Wheal Breage, but as he appeared to prosper, I suppose that he did gain by it. By his marriage with the daughter of Capt. Phillips, the manager of Great Work during its first and successful working, he acquired the nucleus of his wealth. You are aware that Godolphin Mine, worked from about 1800 to 1809 by Messrs. Williams and Co., yielded much profit.

About the year 1820 Mr. Tyacke constructed a water-wheel about 50 feet in diameter, in order to work on a lode untried by Messrs. Williams and Co. southward of the lodes exhausted by them, and I think he called the mine South Godolphin; it yielded copper in moderate quantities, but I never heard that it gave any profit. I understood that he was the sole adventurer; it only worked a very few years. After it was abandoned by Mr. Tyacke the whole of the Godolphin Mine was worked by a London party, and then by Messrs. Lyle and Co., who altogether lost about 150,000l. in it. I do not remember what other mines Mr. Tyacke was connected with, except Great Wheal Vor, with which he became connected in 1819 upon the bankruptcy of Messrs. John, Wm., and Thomas Gundry, of Goldsithney, when he purchased some of the shares sold by the assignees of their estate. He also purchased six shares (64ths, I believe) from Mr. C. Wallis, who obtained them under the same sale. Mr. Wallis sold those shares for 1300l. when they were really worth five times as much; he sold them when in a poor temper with the late Mr. H. M. Grylls and others, who were with him on the committee of management, and who opposed and vexed him. Mr. Tyacke became the manager of Wheal Vor immediately after the bankruptcy, I believe, and continued so till his death. The profit up to the cessation of the works (1844) was 272,000l., so that Mr. Tyacke and his representatives must have profited very largely by their connection with this mine. You know that in most parishes there is what we call a "great man," or chief, having precedence to all others in it. In the parish of Breage Mr. Tyacke was so regarded, and as such he was feared if not loved. Next to him stood the parson, the Rev. H. Williams; but when Mr. E. Coode, of St. Austell, came to the church, he was considered the first, but he was a non-resident, and having about 1000 acres of good land there, he came occasionally to Metheligh, the family mansion, now a farm-house.

Mr. Tyacke had two sons and one daughter; those are all that I remember—the eldest son is the Rev. R. Tyacke, Vicar of Palsow, a man, I believe, much beloved, and Mr. T. P. Tyacke, a solicitor, who practised at Helston, where he died about three years ago. The daughter died young and unmarried about the year 1824. Two sons of the Rev. R. Tyacke are clergymen—one at Helston and the other at St. Ives, and another son is a solicitor now practising at Helston, all of whom have, no doubt, derived benefit from Mr. R. Tyacke's mining success.—*Truro, Sept. 25.*

R. SYMONS.

LONGITUDINAL EXTENT OF LODES.

Sir,—There are many persons (even miners) who entertain an opinion that lodes are almost illimitable in their extent, while others maintain that they are not so, extending only a mile or two. The late Mr. W. J. Henwood, who was a very laborious investigator of mineral phenomena for a long series of years, said that no copper, tin, or lead lode in Cornwall or Devon could be traced for more than two miles. In Devon the Great Consols lode has, since Mr. Henwood's book was published, been opened up for a greater length; but in Cornwall no lode that I can just now think of has been opened so much as two miles, unless the lodes from Carn Brea to Stray Park have been opened so far. I have been told that the same lodes have been worked on through those mines—that is to say, about 2½ miles; but I do not know if it is so. In the Consolidated Mines, Gwennap, the operations were about 1½ mile; in Great Wheal Vor about one mile in length. I am not aware that the identity of lodes can be proved from Great Wheal Vor to Old Tolgus, although the general run is the same for four miles. There are not many mines in Cornwall in which operations on any one lode (except iron) have extended to a mile. The great iron lode of Perran has been traced about five miles, and I have heard that in some foreign countries lodes have been traced at surface by outcrop for 15 miles. The presumption in the continuation of lodes in Cornwall has induced many promoters of mines to attach an undue value to them.

When East Wheal Rose became a rich lead mine the land northward and southward thereof was eagerly taken up by numerous parties, all alleging that East Wheal Rose lodes passed through their sets. But it could not be found even in the nearest mine at the north, which was called Wheal Rickard. Then there were Wheal Metha, North Wheal Rose, Rose Consols, &c., all claiming the same lode, but all turned out to be worthless. Of all the 20 or 30 mines set on in consequence of the success which attended East Wheal Rose not one of them was worth a penny, not one is now at work, nor did either of them work only for a short time. After the Devon Great Consols Mine was discovered to be rich the ground westward for miles was taken up under a presumption that the great rich lode there ran through the whole of them. There were Lamerhorne, Wheal Maria, Wheal Williams, Wheal Benny, Great Wheal Martha, West Martha, Great Sheba, &c., all the promoters in faith searching after that lode, but all in vain. The lode appears to have been broken to pieces, or annihilated, at the Capel Tor rock, as I think it is called. All the mines at the west have been found worthless, except New Consols (late Great Wheal Martha)

and West Consols (late Sheba); but we cannot say that they have the richest ever known in the county, but all the mines eastward and westward have been failures.

Tresavean great copper lode yielded rapid wealth—in all nearly half a million; and yet the lode was not found worth anything at the west, in Carvannel, nor eastward, in East Treviskey. After entering the slate the lode died, or was split into small parts. Now, many persons have been searching for this lode eastward, but in vain. The late Mr. Benjamin Sampson expended hundreds of pounds, and extended about ½ mile into Devis estate searching for the lode, but found nothing of note. The late Mr. Michael Williams, of Trevice, believed that the Tresavean lode ran under Trevice House, but no search was made for it, and I doubt not that a search would be useless.

If I may take the liberty to offer a word of advice to promoters of, and speculators in, mines, I say put little faith in the continuity of lodes—rather trust to a lode parallel to a rich lode. Extensive experience has shown that you cannot rely on the continuance of a rich lode in any district. I may instance the Chiverton district, where, owing to the success at West Chiverton, several mines have been started; but not one of them has been successful except West Chiverton. I am pleased to find that that mine, under Captain Southey's good management, is likely to pay dividends for years to come. He should have a testimonial for his great energy.

Truro, Sept. 7.

R. SYMONS.

NEW CONSOLS.

Sir,—It has been frequently said that nothing injures the credit of a mining company much more than the postponement of pay days. There are many mines in Cornwall in which this has occurred frequently. It occurs only in those mines where capital has to be called up, but that only occasionally. In conversation a few days ago with Capt. R. Pryor I asked him this question—"You have had to call up a great deal of money to carry out your works in New Consols to their present extent, did you ever put off a pay-day?" He replied, "Not one." That fact reflects credit on the managing director—Mr. H. L. Phillips.—*Sept. 25.*

R. SYMONS.

WHEAL GRENVILLE, AND ITS MANAGEMENT.

Sir,—Mr. Lane, as is his custom when anyone dissects or disputes his statements, commences his reply to my last letter by accusing me of making assertions knowing them to be false. He now gives us what he calls figures taken from the late secretary's balance-sheets in confirmation of what he (Mr. Lane) stated at the late meeting. I have gone carefully over my former statements, and see no reason to depart from them, and if any shareholder has retained a copy of the accounts for the seven months—February to August, 1875—altered to by Mr. Lane, he will see that it is impossible that Mr. Lane's statement can have been founded, or his figures and calculations based, on those accounts. If they are, Mr. Lane has some process for extracting facts and figures when they do not exist, and of which he is the sole possessor. As regards the average price of tin obtained by the two managements, the former average made two parcels of the ore they sold—No. 1 and No. 2. Sometimes No. 1 fetched 12s. 14d. per ton more than No. 2, and in making my average of the price, I, of course, based my calculation upon the amount both parcels realised. Mr. Lane, however, takes his average from the price No. 1 parcel fetched. Mr. Lane, together, and as Capt. Holge now sells all the tin in one parcel, Mr. Lane, by putting the average price of this against that of No. 1 parcel of the former management, makes a greater difference in the respective averages than really exists in the management. But ought I, at the risk of being again accused of making assertions which I know to be false, to question Mr. Lane's fairness or infallibility? Mr. Lane, however, has the charming candour—as his friend Capt. Holge has admitted the fact, and therefore there can be no question about its correctness—to admit that breakages at the mine are of frequent occurrence. But Mr. Lane asserts that they arise from the imperfect state in which the machinery was left by the former management. If this be so, how is it that these breakages did not occur under the old management, and how can the fact be explained that after Mr. Lane's party had spent 400l. in repairs to the machinery, the worst breakage that ever happened at the mine took place on the 29th of last month? Mr. Lane quotes the engineer's report, which is something like locking the stable door after the horse has been stolen.

The most ludicrous part of the affair is that these very engineers who are now quoted by Mr. Lane as great authorities were—as I informed you in my letter of Feb. 7 last—discharged on the score of economy, on Mr. Lane and his party assuming the management of the mine. Among other officials "whose removal last year," to quote Mr. Lane, "with others was necessary for the better management of the mine" was the clerk at the mine. He was discharged with the agents and purser, but it was afterwards found that neither Capt. Holge nor his son, who acts as purser, could manage the accounts, and the clerk was re-engaged. A great deal was said by Mr. Lane about the great saving that would be effected in local salaries, but if any shareholder will take the trouble to make the enquiry, I think he will find that the present local salaries are nearly, if not quite, equal to those under the old management. Mr. Lane wishes us to believe that with a smaller number of men the work is better done, and more ground is being laid open than has been taken away. Why, Mr. Editor, the present management has not sunk an inch in the mine, although they have had the advantage of an unusually dry summer. The only new level they have opened is the 110 from the north shaft, which the old management were sinking when the change in the management took place. The mine, which has only 24 men driving ends, some of which are in hard ground, and 74 men stopping and on tribute, 16 of the men bottom stopping, is not, in my opinion, to be increasing its reserves to any great extent. And here let me enquire what has become of the thousands or tens of thousands of tons of tin dust which the shareholders were told at their general meeting in March last the former management had left standing in the mine, and which it would take five years to exhaust? If these reserves exist, why does not Mr. Lane content himself with working them away for the present, and not go on opening new ground and sink only in which is paying the cost of driving? Mr. Lane still persists that he has increased the sale of tin, but he fails in the proof. It is just possible that the return for this quarter may exceed the last, for there has been and is a very good lode and in easy ground in the bottom of the 130 east, which is being rapidly stopped away. But the lode in the 140, just under this point, is poor and unproductive. Mr. Lane thinks the shareholders may confidently rely upon an increased quantity in the tin sales from the present time. As the imprisoned Richard remarked, on hearing the song of his faithful minstrel, "McMinnie there last night told me before, I already saw the same thing." Is it not a fact that only two or three days before the last meeting one of his most ardent supporters sold his shares, some hundreds in number, at 2s. 6d. each, disappointed and disgusted with the result of Mr. Lane's fine promises? Can I say he is more contented with the result of Mr. Lane's management than this? In his movement, Mr. Lane has accused the old agents of breakages. He spread no charges to effect his object. The old management in his eyes was rank with all sorts of vices, which appeared in the *Journal* of November 20 last, commenting upon the secretary being one of the largest shareholders in the mine, Mr. Lane made the following remarks:—"He (that is the late secretary) is the largest holder in the shares, and he influences the market to raise or depress them, as he thinks fit. This is one of the abuses I complain of."

This is a serious charge to make, but what will be said when it is known that the present secretary, appointed by Mr. Lane himself, is now the largest shareholder in the mine. I do not for one moment imagine that he is secretly working this influence as Mr. Lane accused the late secretary of doing. He has no object in matter to show Mr. Lane's disregard for consistency where he has no object to gain. If he saw a great power for improper influences in the fact of one secretary being one of the largest holders of shares, what has he to say to his own specially appointed official being the largest holder. There is no doubt that most of the shareholders who supported Mr. Lane in his movement did so under the idea that he would soon place the mine in a profitable position, and thereby cause a great rise in the price of the shares. What a bitter disappointment the result of the last 10 months must be to these too credulous individuals. No part, from the mine, still calls, calls, calls, and the shares of a merely nominal value. Mr. Lane, still, might have thought that he could really perform all he promised. He might have pictured to himself enormous profits from his own superior system of working "the thousands or ten of thousands of tons of ore" the former management and foolish agents had left standing in the mine. He might have fancied the crowning delight of all his management and virtues enlarged upon and applauded at an enthusiastic meeting of grateful shareholders, and a substantial recognition of his services, as a West Chiverton. But none of this has yet occurred. Mr. Lane, however, continues to invite the credulity of the public, and tells them to turn a deaf ear to the advice and opinions of—

Cornwall, Sept. 26.

SAINT PATRICK MINE.

Sir,—The features in this mine are now so very favourable that the realization of expectations can only be delayed a very short period. Any hour may bring news of a large strike of ore of great value in either of the three drives being cut out now being rapidly pushed forward. There are three cross-cuts from the shaft in the 120, 90, and 60 yard levels depth. The 60 yard level is the chief, which progresses rapidly, and may strike a flat of lead at a moment's notice. The 90 yard level is in the black limestone, and is particularly promising. The 120 yard level

Mr. J. TAYLOR regretted that circumstances prevented his brother from being present, because he had inspected the mines, whilst he himself had not had the advantage of seeing them. They entered upon this mining field believing that it had been very productive in former times, and they knew that it produced an ore in great demand—a calamine of high quality. They had found calamine of high quality, and evidence also of the former mines having been rich, but they had not yet met with the large deposits anticipated. Their returns had been somewhat interfered with by the Carlisle war, but silver-lead and calamine had been obtained, and had gone far to pay cost. They were, however, by no means out of heart, and had confidence in the property. If they found one of the rich deposits worked in former times it would soon recoup them for all the expenditure they had made in the property. Their preparations had been held out by others as too bold, and he believed that all the shareholders with whom the directors were acquainted desired to give the mines a liberal trial. They had a great satisfaction in having an able superintendent at the mines, who had well stored them through the difficulties arising from the presence of contending forces.

The CHAIRMAN remarked that they had actually obtained 312½ tons of ore, and at one time it looked as if they were getting into permanent profits, but for this they must wait a little longer. They had, however, the gratifying fact that Capt. Gifford states, with regard to the property, that from the appearances at surface no one could hesitate to make a large outlay on the mine. They had

money to go on for six months, and if they should prove La Berta rich they would have nothing to complain of.

The report and accounts were then unanimously adopted. Messrs. J. P. Judd and R. Henry were re-elected directors, and Mr. G. F. Rait was re-appointed auditor.

Mr. Rait thanked the meeting for re-appointing him, and could, both as auditor and as a shareholder—for he had taken shares, and like the directors, paid for them in full—vouch that no company could be more honestly managed, and none that he was acquainted with—and he held shares in many—more economically. He had been connected with many in a far more deplorable condition than theirs which by perseverance and good management had been made prosperous. He had full confidence in their property and in the management.

Mr. J. Taylor thought it worth while to mention that their auditor had paid much more in calls than he had received for auditing, and he might say that he quite agreed with him as to the results of mining enterprise properly carried on. He had been making a careful review of all classes of investments, and found that mining was quite as good as any of the rest. Unless a man succeeded to a business which had been conducted by his father and grandfather, perhaps—which must be considered removed from the region of speculation—there must always be a certain element of risk; but, comparing mining such as they were engaged in with collieries, ironworks, &c., the advantage was decidedly on the side of mining; and it also compared most favourably with foreign loans and similar speculations. He, of course, referred only to mines where no undue payment was made by the company for taking over the property, and not to those which were taken over at large premiums. From the time he came to London—42 years ago—to become connected in business with his father, they had been lucky enough to distribute dividends to the holders of shares directly managed by them—he did not include those with which they had been but temporarily or indirectly connected—considerably more than 2,000,000. sterling, and he believed that, on the whole, the shareholders had received handsome interest upon their investments. Thanks were then unanimously voted to the Chairman and directors, and the meeting separated.

NEW PRINCE OF WALES SLATE COMPANY.

An extraordinary general meeting of shareholders was held on Friday, Sept. 22, at the offices of the company, St. Clement's House, Clement's-lane (Mr. J. STEWART in the chair), to consider the present financial position of the company, and, if deemed advisable, to authorise the directors to raise the further sum of 5000*l.*, or any part thereof, for the purposes of the company by the issue of second mortgage debentures on such terms and at such rate of interest as may at such meeting be determined.

Mr. G. J. GRAY (the secretary) read the notice calling the meeting.

On the motion of the CHAIRMAN, the following resolution was then passed:—

"That the directors be and they are hereby authorised to raise the further sum of 5000*l.*, or any part thereof, for the purposes of the company by the issue of second mortgage debentures on such terms and at such rate of interest as the directors may deem advisable."

At the request of the Chairman, the SECRETARY explained the present position of the company. He said it would be in the recollection of the shareholders that, at the meeting held in June last, the financial position of the company was fully discussed, and a committee of shareholders appointed to confer with the directors as to the best means to be adopted to carry on the undertaking. That committee consisted of two of the old shareholders and Mr. Taylor, and had conferred on two or three occasions with the directors. He might state that in August last the directors visited the property, but before doing so they obtained the services of Mr. Davies, of Oswestry, a practical geologist, who was recommended by one of the shareholders. Mr. Davies went over the property, accompanied by the directors; Mr. Davies' report had been sent to the shareholders, and they would have seen the favourable opinion which he entertained of the property, and also the amount which he estimated was necessary to bring it into full development. The point was whether the amount could be raised to-day. He might mention that, irrespective of the Prince of Wales Quarry, the company had an interest in the Gorseilla property, and the directors were now negotiating for the sale of the Gorseilla property. Of course, if that sale was carried out, the company would be in a greatly improved condition, because they would be able to pay off the debentures, a lot of them would be some small balance left to carry on the undertaking. As far as the directors were concerned, they wished to ascertain whether the meeting would be able to raise the sum stated as necessary by Mr. Davies, irrespective of the Gorseilla property altogether. The estimated amount required was 2715*l.*, but 1000*l.* of that was for uncovering the debris from the upper part of the quarry, and the rest would stand over for the present, so they would not need to meet an outlay of (say) more than 2000*l.* Mr. Davies had stated in his report that 20*l.* 0*s.* 0*d.* per month could be produced from May, 1877, to May, 1878, and from that time the output would go on increasing; therefore, the shareholders would have to consider whether they were satisfied with his report, and if so whether they would be prepared to co-operate with the directors and see if the required sum could be raised, and if not, to decide what was to be done. Slates had been sold to the extent of 1200*l.* since the company had been re-started, but owing to a large amount having been spent in the development of the quarry, the cost had been rather more than the amount realised, and there had been a deficiency of something like 1500*l.* or 2000*l.* per month. The works had been carried on with comparatively few hands, about 40 or 50 men, whereas the number should be trebled if the works were to be carried on with efficiency.

Mr. BARROW, a director, said he had had the pleasure of visiting the property in company with Mr. Logan and Mr. Davies, of whose ability he entertained a very high opinion. He considered Mr. Davies' report was very able and very exhaustive, and he firmly believed that everything Mr. Davies had stated in the report was true, and he was particularly anxious to make a report which was "sweet" to the shareholders, but to give a trustworthy report, such as the condition of the quarry justified. He certainly considered the report of Mr. Davies to be true and trustworthy, and he might also mention that Mr. Roberts, the quarry manager, had since sent an independent report without any consultation with Mr. Davies, and that report bore out the report of Mr. Davies, which so far was encouraging. But, as the Chairman had said, money must be found, and it was for the shareholders to decide whether they would raise that amount, or what more shareholders were not present. He had himself conferred with several shareholders, and had written to many of them, but the response which he had received was not encouraging.

Mr. LOGAN explained that even if the Gorseilla property were sold, most of the money would be required for the debenture-holders, and, therefore, it would be necessary for the shareholders to raise 1500*l.* or 2000*l.* No doubt, however, if a few hundred *l.* or more were raised the debenture-holders would allow a portion of their money to stand over.

A discussion ensued, in the course of which several shareholders expressed an opinion that at any rate the directors had done their duty in trying to keep the company going, and bring it to a success. It was also stated that the slates were of excellent quality, and commanded a ready sale—in fact, it was impossible to meet the growing demand for slates.

Mr. HENRY expressed an opinion that the directors had done all in their power, but unfortunately the results were not so satisfactory as could be desired. There was no doubt the position of the company had very much improved since the present board had been in office.

The CHAIRMAN said it was evident that the shareholders must come forward with money, otherwise the property must lapse to the debenture-holders.

After an unimportant discussion, in the course of which it became evident that the shareholders were not likely to find the money,

Major BATES remarked that as the shareholders were unwilling to find the money the only thing to be done was for the debenture holders to take the property.

A vote of thanks to the Chairman closed the proceedings.

PATELEY BRIDGE LEAD MINES AND SMELTING COMPANY.

The general meeting of shareholders was held at the company's offices, Austinfriars, on Tuesday.

Mr. GEORGE BATTERS in the chair.

Mr. W. J. LAYINGTON (the secretary) read the notice convening the meeting, and the statement of accounts and report of the directors and agents were submitted.

Capt. C. WILLIAMS reported upon the various points of operation during the last 12 months. He suggested certain work, and stated that if it be carried out they will have one of the best developed mines in Yorkshire. Their permanent horo-levels are over 4 miles in length, and have been thoroughly repaired during the past year.

Capt. J. BLENKIRN in a special report gives an outline of what has been done since the last general meeting. He states that probably the easiest and most economical way of opening out the ground would be to make a communication to surface over the shaft in the eastern part of their ground in Sun vein, then sink the engine-shaft a few fathoms deeper, and drive eastward in Sun vein, proving the same, and at a convenient point cross-cutting the ground to other veins, and draining the water from the mine into the eastern part of ground where drained by Eagle level. He trusts when the shaft in Rake vein is completed, and the cross-cut through to Lamb vein, that they will lay open ground that will yield ore to pay costs until the eastern end of ground is laid open. They will raise ore that will make about 15 tons of lead this month.

The CHAIRMAN said that as the reports and accounts had been in the hands of the shareholders for some days he need say little about them. The accounts spoke for themselves. They had sold 82 tons of lead for 1700*l.*, and at present had a small credit balance, but he would make some remarks as to what is proposed for the future. As Capt. Williams and Mr. Hutchinson were present they would give any information required. The main points to which they had to direct their attention was the sinking of the engine-shaft, the driving on the Primgap vein, and the sinking on the vein to unwater the mine from the eastern level. They would have seen that the engine shaft had been sunk 11 fathoms under the 20, and Mr. Blenkiron recommended the sinking of 5 fathoms more before driving out the cross-cut. This would no doubt be advisable if they had more means, but as it was they thought that the cross-cut should be sent out to cut the bed—a course of ore continuing from surface down to the lowest point, and which was worth 3*l.* per fathom when they had it in the shaft. The bed is dipping from the shaft, so that a cross-cut would have to be driven 3 fathoms to intersect it, and 4 fathoms drive beyond the bed would be necessary to reach the vein. The driving of the 3 fathoms would take about two months, and I would leave a little over 10 fathoms of backs in the bed. The remaining 4 fms. would take about two months also; the vein would, therefore, be reached in about four months. Another important point was the engine-shaft, and he might mention that when the water broke in on the old workers they were raising about 2 tons of ore per month. The total cost of working the mine would be about 300*l.* or 350*l.* per month, and as 60 tons would be worth about 900*l.*, there would be about 50*l.* profit. That has yet to be accomplished, and the estimate of time for it was six months. Another point was the driving of the cross-cut at the 20 to cut the Lamb vein: there was 3½ fms. or one month's work to intersect it. This lode was a big lode from 12 ft. to 18 ft. in width, with

4 tons of ore per fathom, and in tolerably easy ground. These are trials being prosecuted. He now came to trials recommended but stopped for want of funds. The Gillfield level had been cleared up, and iron rails laid for a distance of nearly a mile, so that they certainly should not, in his opinion, now stop short. Much had been said about working the mine from the Perseverance level. Mr. Hutchinson recommended that they should work on the Sun vein in the Gillfield level, so as to unwater the west mine. It was also proposed to continue the sinking of the shaft to the 30 fathom level, and then drive out on the Sun vein. In the Gillfield level they now recommend that they should put up a rise to the surface, which could be done in the Sun vein cheaper than in the country. This would take about 10 months; the expense would not be large, and there are chances of a good discovery. The chief object of each of the levels had been to open up a series of veins known to exist. Little of the work during the past year had been productive of results to them. They were erroneous in their calculations. With regard to the future, they were really impetuous, but during the next months the agents say they will sell 15 tons of pig lead, which would pay cost, and within three months they would be able to raise a much more from the bed, and in six months from the vein. When the company took possession nearly every ounce of ore had been removed, and they had to make new discoveries for themselves. They had an asset of 500 *l.* worth of shares, which a few months ago they could have sold for 5000*l.* or 6000*l.*, but they did nothing with them. The directors now recommended the issue of 400 shares at par. Men were not in the habit of taking up shares at a higher price than they could be obtained in the market, but it was proposed to offer them an inducement in this case by giving them the option of taking up an equal number at par—an option which would be of considerable value if the mine turned out as anticipated. He asked them to summon a special general meeting to determine that the various trials recommended should be carried out. He might mention after the proposed new issue, and re-issuing shares, or the option, there would still be 200 shares on hand, so that there would be an ample reserve.

Mr. POWELL, referring to the remarks of another shareholder, said that they had six months dead work before them, so that 13 months was certainly not too long an option to give.

The CHAIRMAN continued, that Mr. Hutchinson told them that the Eagle level could be driven any distance without being interfered with by other mines, which would not be the case with the Perseverance level. He concluded by moving that the report and accounts be received and adopted.—Mr. KITCHIN seconded the resolution.

Mr. HUTCHINSON approved of all that Mr. Batters had said; he thought they had a good piece of ground, and that if they carried out the trials recommended it would be of great advantage to the ground. The old company had got out all they could without further sinking. But Capt. Williams would soon be in equally good ground, and also at the eastern part of the ground they would get a good course of ore. He was never an advocate for the driving of the Perseverance level, or he would have driven it instead of the Eagle level. The difference of cost would be small fortune. He hoped if they could raise funds that the eastern ground would give them a very good mine. The gross yield was 150 tons of ore (54 tons) in the last month it was worked. In one part they had 16 to 18 inches of solid ore, and he might say that he was almost the last man in the mine, as the water shortly afterwards broke in.

The report and accounts were then adopted. Mr. George Batters was re-elected a director, Mr. D. Norris was re-appointed auditor, and it was unanimously resolved that the recommendations of the agents, Capt. Williams and Mr. Hutchinson, to drive up the Perseverance level and get back the 100*l.* deposit, be carried out; that the mine be worked through the Eagle level; and that the 400 shares be issued as proposed, a special meeting being called to confirm the resolution or otherwise.

Capt. WILLIAMS said they would have 15 tons of ore for the present month, and 15 tons for the next; after that they would cut the Lamb vein and be able to get much more ore. When they cut the bed that would help them considerably, so that they ought to be getting good profits by the beginning of the year.

The usual vote of thanks to the Chairman terminated the proceedings.

GREAT WHEEL VOR UNITED MINES.

The quarterly general meeting of the adventurers was held, on Thursday, at the office of the company, Gresham House, for transacting the general business of the company.

Mr. JNO. O. HANSON occupied the chair.

Mr. J. JAMESON THURAN (the secretary) read the notice calling the meeting, and also the following report of the directors:—

The committee have the pleasure to report that since the last quarterly meeting, on June 29, the call then made has been so fully responded to by their fellow-adventurers as to enable them to liquidate the liability of the company outstanding on relinquished shares, and to provide for current expenses. The main operation now being carried out—of sinking the West Metal shaft to the 100 fms. level—has progressed satisfactorily. It will be remembered that it is at this point where competent authorities believe the great cross-course will be reached, and that the success or non-success of the company for the future mainly depends, inasmuch as it was in the vicinity of this cross-course on the north in Old Wheel Vor Mine where the lode was so productive, and yielded such profitable and important returns. This point the agent hopes to reach about the period of holding the quarterly meeting in December, and the committee need not state that they look forward to that result with great anxiety. The price of tin, like that for many metals, continues very low, but should trade revive, of which at length there are happily some slight indications, it may participate in an improved demand. The committee have the pleasure to report that the future mainly depends, inasmuch as it was in the vicinity of this cross-course on the north in Old Wheel Vor Mine where the lode was so productive, and yielded such profitable and important returns. This point the agent hopes to reach about the period of holding the quarterly meeting in December, and the committee need not state that they look forward to that result with great anxiety. 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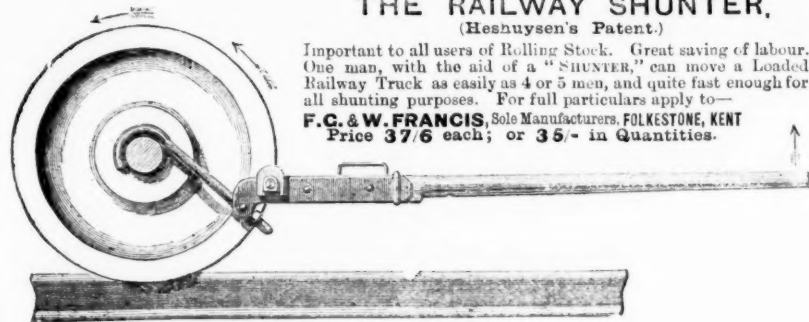
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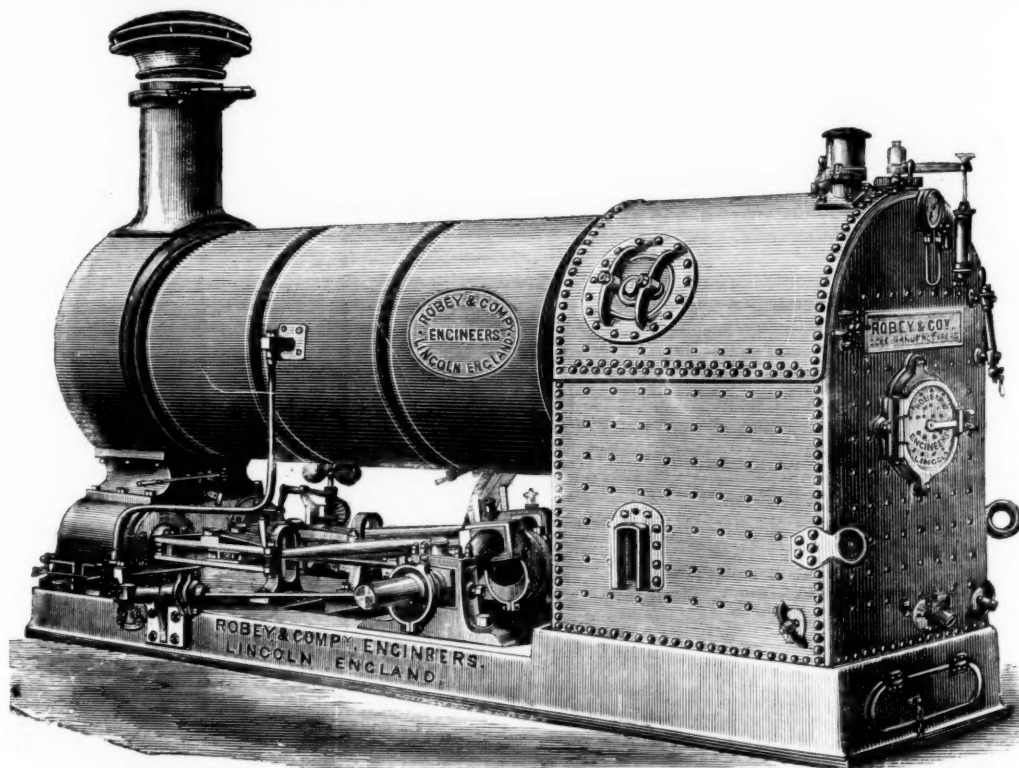
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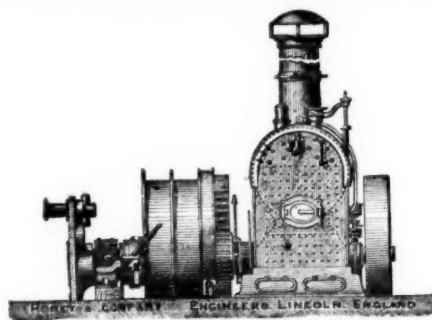
THE IMPROVED ROBEY ENGINES.

It was recently noticed in the *Mining Journal* that Messrs. Robey and Co., of Lincoln, have transferred their London offices, in order to afford those requiring steam power an opportunity of examining the engines for themselves, and without leaving the metropolis, before concluding their arrangements for purchasing, and as the sample engines are now in position, a brief reference to a few of the leading types of engine may not be uninteresting. Perhaps the most attractive machine on view at the Cannon-street warehouse is the Patent Robey Fixed Engine, an engraving of which is given above, and which is claimed to supersede the old horizontal fixed engine and separate Cornish boiler. Amongst the advantages possessed by this type of engine special mention may be made of the saving of time and expense of fixing (very slight foundations being required and no brick chimney) and the great economy of fuel.

It is generally acknowledged that the locomotive type of boiler which is employed in this engine will evaporate about 20 per cent. more water per pound of coal than the Cornish or egg-ended. There is no loss due to leakage or radiation from steam-pipe and other large surfaces. The boiler working with an artificially strong draught, an inferior, and therefore cheaper, class of fuel can be used. The engine parts are fitted up with all modern improvements, the cylinders are steam jacketed, and the valve gear is arranged to work with variable degrees of expansion. The result of the whole being an economy of fuel, as proved by actual comparison with the old type of engine doing the same work, of from 20 per cent. to 50 per cent. As will be seen, the entire engine is erected on a massive cast-iron bed-plate, so that the boiler is relieved of all strain due to the engine, and is confined to its legitimate purpose—that of raising steam. The base-plate is formed at one end into an ash-pit, with damper doors, and is made suitable for receiving the fire-box end of the boiler—the other end of which is carried by a crutch-shaped casting fixed over the cylinders. The end of the base-plate under the cylinder is formed into a feed water tank, into which the cylinder cocks discharge all condensed water, and into which a portion of the exhaust is so directed as to heat the feed water to nearly boiling point before going into the boiler. The whole of the parts of both engine and boiler being included on one foundation or base-plate, heavy and expensive foundations are dispensed with—the weight of the boiler and its contained water acting as an extra weight to assist in keeping the whole machinery in rigid position.

Reference may also be made to the mining engines, the construction of which has for many years past been made a specialty by Messrs. Robey and Co., who now claim that their large experience has enabled them at length to introduce an engine which, for simplicity of design, ease of erection, economy in working, and thorough adaptability to its purpose, is unapproached by any other. The engine running at a high speed relatively to the load, there is much less risk of overwinding, the whole machinery is more thoroughly

under control, and can be started, reversed, or stopped in any position with the greatest ease, and all levers being conveniently near to the fire-door, one man is enabled to attend to both stoking and



driving. Although its many advantages have made the semi-portable engine so great a success for sinking purposes, and for winding when comparatively small powers are required; yet it has been urged that they lack that stability and permanence of character which is so essential when a very large power has to be constantly exerted. To meet such cases Messrs. Robey and Co. have patented the design illustrated above, which, as has been shown, is not only much superior to the fixed engine in all the points previously enumerated, but at the same time possesses every advantage that can be claimed for the fixed machinery, while it is free from all its defects. The whole of the levers for working engine and winding gear are brought conveniently together near to the fire-box, so that one man can attend to both driving and stoking. Each engine is so arranged that it can be fixed separate from its own locomotive type of boiler, and thus steam can be taken from boilers already fixed at the mines. In cases where the engines only are supplied the locomotive type of boiler can be subsequently fitted thereto if required. Special provision is also made for taking steam from these boilers for other purposes.

The general character and finish of the engines manufactured at the Perseverance Works are so well known that it is scarcely necessary to state that the samples shown in Cannon-street are really models of good workmanship, and are of very attractive appearance. The convenience of being enabled to examine in London an engine to be purchased precisely in the condition in which it will be delivered will doubtless be appreciated by a large number connected with the management of mines, and can scarcely fail to increase the already large business of the firm.

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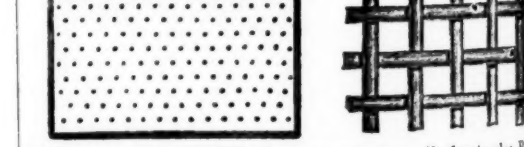
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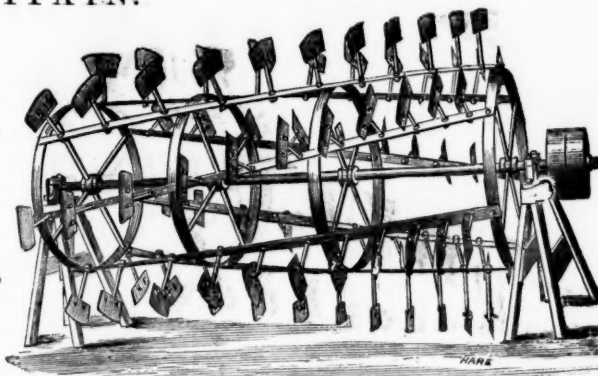
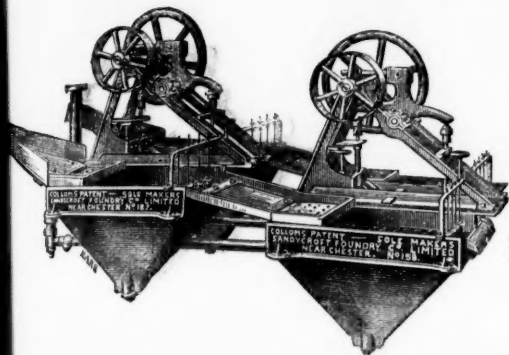
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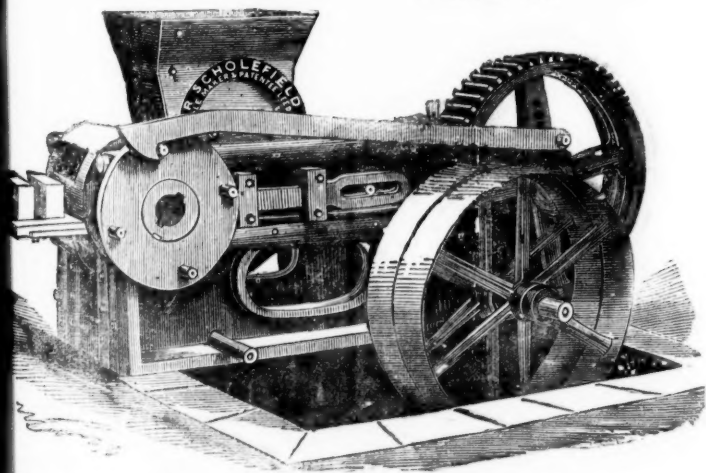
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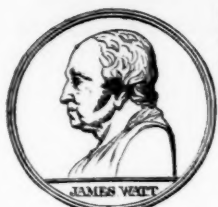
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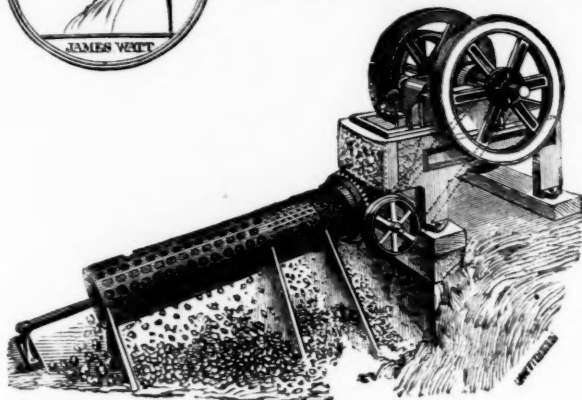
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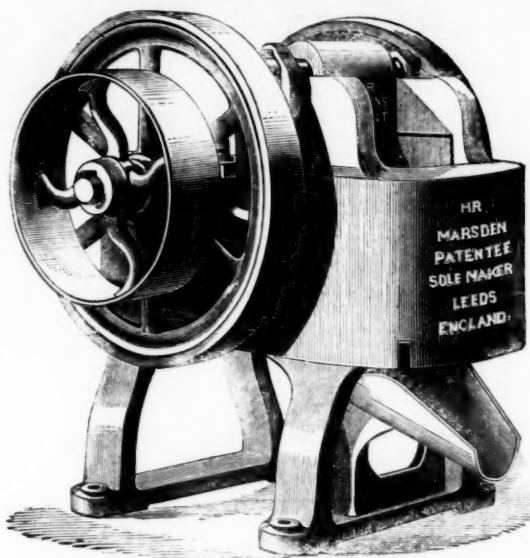
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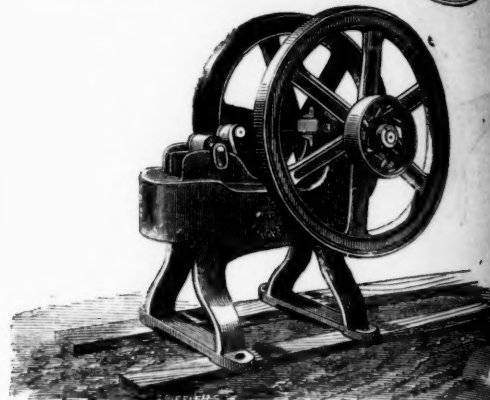
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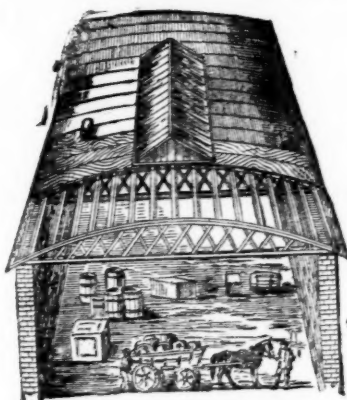
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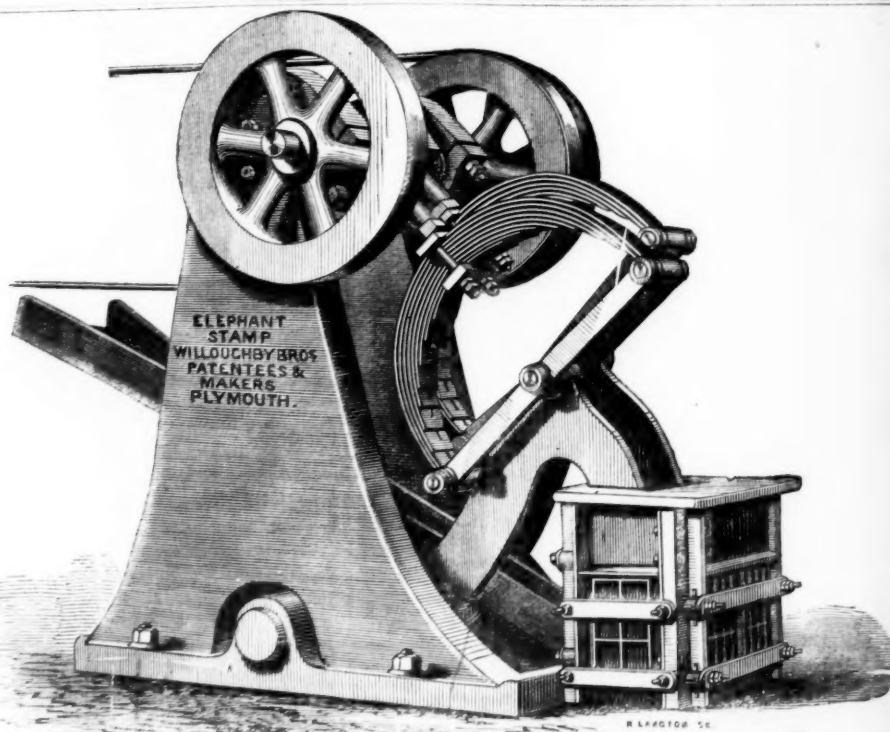
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